

UKIP PARLIAMENTARY RESOURCE UNIT

European Banks: Not Fixed Yet



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Konrad Urban

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Preface

I am grateful to Konrad Urban for warning in this UKIP Parliamentary Resource Unit paper, prepared under the supervision of Professor Kevin Dowd, that European banks are ‘Not Fixed Yet’. This closely researched and referenced paper challenges an all too cosy and convenient consensus among bankers, regulators and politicians. They act as if lessons have been learnt and actioned after the financial crisis which followed the near-freezing of interbank lending from August 2007. The reality, this paper argues, is that most major UK and European banks remain perilously thinly capitalised, such that there is a substantial probability that taxpayers will have to bail them out once again if a financial crisis of similar scale were to recur.

Why banks resist higher capital ratios

Over half a century ago a seminal paper by Modigliani and Miller showed that, in a pure market, the financing structure of a bank, i.e. the amount of equity versus debt, should not affect its value. Yet banks and their lobbyists resist higher capital ratios which require more equity relative to debt. This paper shows that there are two reasons why, with high liquidation (‘bankruptcy’) costs, banks so resist: 1) interest costs are tax deductible; and 2) liquidation costs may be met by taxpayers. Thus profits are private to equity holders, while losses may be public and shared by taxpayers, rather than being fully absorbed by equity and then debtholders. So it is understandable that banks resist raising more equity relative to debt, yet why do regulators and politicians let them get away with it?

The extent of regulatory capture

Politicians, George Osborne at least as much as Gordon Brown before him, rely on the financial sector for money. Political donations and tax revenues are often cited, but more important still are bank holdings of gilts, with banks, public and central as well as private and overseas, owning more and more government debt. Regulators, whether the Bank of England, now as the largest single holder of UK government debt, or central banks meeting in conclave at Basel, decree government debt as zero risk. Inevitably then, governments get too deeply into debt, as banks buy excessive amounts of that debt, including central banks which concurrently hold interest rates down to prevent losses on that debt. Central banks and regulators can develop vested interests akin to the banks they oversee. Beyond the constant flow of staff between them and private banks, central bankers and regulators pledge to underpin the stability of the financial system. Such stability, at least in the short-term, is unlikely to be supported by central banks diagnosing insufficient capital amongst their charges. This paper shows how EU requirements for member states to seek permission to apply higher capital ratios are particularly unhelpful in this regard.

Inadequate stress testing

Efforts by central banks to stress test bank balance sheets therefore lack credibility. The varying methodologies applied by the European Central Bank and the Bank of England all tend to be overly generous to the subject banks, including the latest which concluded that all the large UK banks broadly had sufficient capital. Instead of relying on the banks' questionable models and assumptions, the paper here runs a stress test based on the actual fall in asset values during the financial crisis. The deeply concerning conclusion is that under such a repeated scenario many systemically important large banks in both the UK and

the Eurozone would once again fall back on taxpayer financing to survive.

The importance of the leverage ratio

A key insight of this paper is that policy makers and the public, when judging banks, should not rely on complex metrics, which can all too easily be gamed by vested interests. Instead, we should focus on one key metric, the leverage ratio, being common equity divided by total exposure (e.g. loans). Common equity, unlike various reserves or deferred taxes, is freely available at all times, while total bank assets are unaffected by questionable assumptions which regulators and banks' own models make about their riskiness. The paper finds that leverage ratios average between 3% and 5% across systemically important banks in the UK and Eurozone. Each pound or euro of equity supports between twenty and thirty three pounds or euros of assets. Even very small falls in the value of assets could thus wipe out the equity of the banks, potentially leading to further calls on taxpayers. While major UK banks are on average somewhat better capitalised than Eurozone banks, the difference is not great. Meanwhile, and contrary to the usual reporting, on the basis of the reliable leverage ratio, it is the core Eurozone banks of France and particularly Germany, rather than those of the periphery such as Italy, which are most thinly capitalised.

Conclusion

The paper sets out compelling arguments as to why banks across the UK and Eurozone are not fixed yet, such that the financial system and taxpayers remain at significant risk even if, say, interest rates were just to revert to their historical norm. Konrad Urban concludes by considering a number of potential ways to improve the resilience and therefore social value of the banking system. The most important and pressing of these is to require systemically important banks

to operate with a leverage ratio of at least 15% (approximately a six to one debt to equity ratio). Banks can be expected to resist raising their equity to debt ratios, certainly to such a substantial degree. The reason they do so is that interest on debt is tax-deductible and taxpayers may step in when banks make substantial losses. That divergence between private and public interest is the reason why politicians and regulators should intervene to require higher leverage ratios, if they put the public interest first.

Mark Reckless, Director of UKIP Parliamentary Resource Unit

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1 Introduction

Dangerously low leverage ratios were one of the main causes of the recent global financial crisis (BIS, 2009; Turner, 2009a). The leverage ratio is one of the most important indicators of a bank's, or indeed any company's, health. Traditionally, it is usually understood as the ratio of equity to total assets. A bank's equity is its shares, which constitute its ownership¹. Financial markets operate with more complicated items than traditional markets, so a definition of the leverage ratio must be carefully constructed to reflect only the items that can serve as a buffer in crises. Currently, there are several definitions used for different purposes (in this paper, *Tier 1 Capital/Total Exposure* is generally used as the leverage ratio metric and will be explained in the next section). Ideally, the leverage ratio assesses the ability of a bank to fulfil its obligations – the relative size of the buffer between debt and assets. High leverage is risky because relatively small drops in asset value can wipe out the equity buffer and lead to insolvency.

At the beginning of the twentieth century, bank's leverage ratios (their level of equity) tended to be around a quarter of total assets. This means that for every investment the bank made, 25% was funded out of the bank owners funds and 75% was borrowed from depositors and creditors. In the case of a drop in asset value, the losses would be covered by this equity and until it was exhausted it would bear little influence on depositors. More equity ensured that depositors trusted banks for two reasons. First, at any level of risk, the probability that the bank's losses are so large as to affect depositors becomes smaller with more equity. Secondly, it used to be bank owners bearing the risk rather than depositors.

¹“Equity” is best illustrated with house mortgages: equity is the home owner's stake in the house. So, for example, if the buyer puts down a 10% deposit, and finances the rest of the purchase with a mortgage (i.e., debt), then the leverage ratio is 10%. Total assets include cash, commercial loans, government securities and interest-earning loans like mortgages. A bank's liabilities are for the most part its debt, e.g., deposits.

In response to the Great Depression governments introduced deposit insurance, responding to the fact that fears of bank failure could create a self-fulfilling prophecy in a bank run. However, the greater trust engendered by deposit insurance also entails that depositors are less concerned about the level of equity of their bank. Transposing the risk to taxpayers also lowers interest rates for the banks. Since the insurance is public, it is fair that in return the public dictates some conditions for banks, such as regulation that ensures equity is adequate. As will be shown, unfortunately this regulation is inadequate.

Theoretically, Modigliani/Miller (1958) (MM) predict that in perfect markets the capital structure (how a firm finances itself) of a firm is irrelevant if there are no market frictions. The value of a firm is independent of how much debt it uses to finance itself in a market that is perfectly informed, efficient, without taxes, agency or bankruptcy cost. This means that a reduction in a bank's leverage, whilst reducing the risk and cost of equity, does not affect the overall weighted average cost of capital.

In practice however, the theoretical assumption of frictionlessness does not hold as there are many outside influences on the market. The logical equivalent of the MM model is that if the value of a firm is dependent on capital structure, then it must be because of frictions. For banks, this means that if changes in leverage affect the value created by banks, then it must be because frictions dependent on leverage exist. Any analysis of banking regulation should focus on those frictions. It should identify causes, directions and social cost of those frictions.

In reality, when a bank is highly leveraged it is very restricted in absorbing losses. Given the interconnectedness of the financial system and banks' similar business strategies, this can mean that the whole economy is at systemic risk. When small decreases in asset value force highly leveraged banks to sell quickly

to reduce their leverage, it will influence overall market prices and other banks (Adrian/Shin, 2010). Even small shocks reducing asset values by 1-2% put highly leveraged banks in danger of insolvency. Even if a bank is still solvent, signals about its exposure to losses may lead to freezes in the short-term funding that the bank so critically relies on.

After a reduction of equity because of losses, a bank must either recapitalise or deleverage by selling assets if it is to restore its previous leverage ratio. How much deleveraging is needed depends on the capital structure of a bank. If a bank's leverage ratio is only 3%, then a loss of £1m means that £33.3m of assets ($\frac{£1m}{0.03}$) has to be liquidated to re-establish the previous leverage ratio. Given the enormous size of banks, this is likely to lower the price of the kind of assets sold and in consequence be dangerous for other banks that have similar assets. Higher equity prevents this chain reaction. For instance, 12.5% of equity would require only a response of liquidating £8m of assets to reach previous equity levels and could largely prevent systemic fragility. More equity means not only a larger buffer, but also that recapitalisation is far less urgent when losses occur, which decreases the probability of a sudden chain reaction.

In bank run scenarios, governments feel compelled to minimise the potential social damage through bailouts and other recovery efforts, which have social costs. Minimising systemic risk and the social costs that come with it is the primary objective of banking regulation. One of these attempts is the Basel III agreement.

2 Basel III

Basel III is a response to the recent credit crisis. It is an agreement designed to improve the regulation, supervision and risk management of the banking sector. The financial crisis became so forceful because banks had excessively

leveraged, both on and off-balance their sheets. Accompanied by a gradual erosion of the level and quality of the capital base, insufficient liquidity buffers and the interconnectedness of financial institutions, this caused bank failures and very high social costs. Basel III is complex and generally beyond the scope of this work. It should be noted that it is composed of regulation standards on: capital, risk coverage, leverage, risk management, market discipline, and liquidity. Different jurisdiction have different ways of implementing Basel III and the EU's newest reflection on Basel III is the Capital Requirements Regulation and Directive (CRD IV), which is composed of two parts: the Directive (CRD) which must be implemented through national law; and the Regulation (CRR) which is directly applicable to firms across the EU. The UK implements CRD through the Bank of England's Prudential Authority and closely follows the CRD IV, the EU's mechanism for implementing Basel III.

In terms of risk coverage and risk management, the Third Basel Accord favours new accounting standards and methods. In terms of market discipline, it addresses issues of shadow banking. All of these rely on risk modelling. In terms of liquidity, it requires banks to withstand 30 days in a stress test scenario.

In terms of capital, the Third Basel Accord requires banks to hold a minimum of 4.5% common equity (the definition of CET1 according to Basel III) of risk-weighted assets (RWAs), and a common equity buffer of 2.5% is introduced which brings the required level of common equity to 7%:

$$\frac{CET1}{RWAs} \geq 4.5\%$$

CET1 capital is essentially tangible common equity plus retained earnings. Fundamentally, this is a good capital definition, because it reflects the core capital that can be used as a buffer. It excludes items such as goodwill, intangible assets and Deferred Tax Assets (DTAs) that were previously included in Core Tier 1 capital under Basel II (Dowd, 2015, p.26). The problem is that the

regulators, i.e. local central banks such as the ECB or the Bank of England, define CET1 differently to the theoretical assumptions outlined above and include DTAs and mortgage service rights (Huertas, 2014, p.22-23, Dowd, 2015, p.26). Furthermore, the Bank of England as well as the ECB use an opaque transitional definition called 'CRD IV end-point CET1'. In that way, regulators have made the CET1 metric far less conservative than it was meant to be (Dowd, 2015, p.26).

The denominator, the risk-weighted assets (RWAs), is deeply flawed. There are many methodological and practical problems with risk-weighting. The ideal metric for capital ratios would be both conservative and difficult to overreport. RWAs are calculated by assigning risk weights to assets. This leads to the danger of underreporting risk. For instance, OECD government debt is assigned zero-risk weights, which encourages banks to accumulate such debt, which was one of the factors causing the European banking crisis. Basel III renders Greek government debt as zero risk and many credit derivatives as very low risk, but all of these have substantial risk. The risk weights are based on assumptions (such as Gaussian value at risk) that do not hold or are easy to manipulate to underestimate actual risk. The models are extremely complex and operate on many parameters making them too easy to manipulate (Dowd, p.26).

The initial thought behind RWA-based capital adequacy requirements combined with a relaxation of equity requirements was to encourage banks to make reasonably safe investments. Yet, it is equity requirements that fulfil precisely that function because they guarantee that bank owners are forced to invest prudently. The problem is deepened by the fact any centralised RWA measure institutionalises a code dictating which investments are safe and which ones are not. This leads to serious systemic risk on the level of the entire financial system when a set of assets is mislabelled (Haldane/Madouros, 2012).

Essentially, any centralised risk-weighting introduces a central planning of risk in the financial sector, which is deeply problematic on numerous levels. One is that when a market discovers that an asset has been categorised as safe, its expected rates of return will increase. Banks may take advantage of that surplus and invest even more in that asset. If the risks were to materialise into losses, this could lead to a system-wide breakdown. Such mislabelling was key to the two recent crises. Both AAA-rated mortgage-backed securities in the US and sovereign debt in the euro area were deemed far safer by internationally recognised standards than they actually were.

As to using the CET1 to RWAs ratio, there is a wealth of empirical evidence that simpler models outperform more complex models (Acharya/Steffen, 2014; Blundell-Wignall/Roulet, 2013; Dowd, 2015; Haldane, 2013; Hogan/Meredith/Pan, 2013; Mayes/Stremmel, 2014; Thomas L. Hogan/Pan, 2013). For instance Hogan/Meredith/Pan (2013) show that in 1994-2007, average risk weights decreased from 70% to 40%, whilst average leverage ratios fell from 5% to less than 3% (Dowd, 2015). Nevertheless, the Basel Committee took virtually no advantage of the insights of social scientists and instead relied on the advice from the professional world which had strongly vested interests (see Goodhart, 2011, p. 572).

Whilst using leverage ratios was historically successful in detecting increasing risk, RWAs falsely showed that risk was decreasing (Haldane, 2011). This is easily explained by the fact that risk weights do not reflect true risk, “but instead reflect the increasing ability of bankers to game” the system (Dowd, p.26). Blum (2008) shows that higher leverage ratio requirements reduce the moral hazard of reporting falsely low internal ratings because such a requirement nullifies the profit that stems from gaming the accounting standards.

The only non-RWA quantitative requirement of Basel III is the leverage ratio

requirement:

$$\frac{\textit{Tier 1 Capital}}{\textit{Total Exposure}} \geq 3\%$$

Where Tier I capital is core capital and includes equity capital and disclosed reserves². The denominator is the Total Exposure which is meant to express the total amount of risk and is a sum of on-balance sheet exposures, derivative exposures; securities financing transaction exposures; and off-balance sheet items (BIS, 2010b, p.62). As a response to banks using innovative instruments to generate Tier 1 capital, Basel III prevents such instruments being counted as Tier 1. This reflects that bankers have put in significant effort to game the requirements.

The fundamental difference between the Basel III leverage ratio and the Basel III common equity requirement is that the latter is risk-based, which renders is far less useful.

It seems that the use of the new CET1 ratio metric, especially in its CRD IV form, instead of traditional metrics such as the leverage ratio is politically motivated. German banks are much better capitalised when CET1-based ratios (i.e. the new measures introduced by the ECB) are used than if traditional leverage ratio metrics are used. In terms of leverage ratio, it is Spanish and Italian banks that are better capitalised than German and French banks, which undermines the common narrative of banks on the euro area peripheries being most fragile (see Vestergaard/Retana (2014)).

Politically, there is likely to be a limit to the possibility of individual EU member states making their capital requirements more stringent than the EU and Basel III require. Although officially the CRD IV will “enable members to impose ... stricter macroprudential requirements for domestically authorized

²Equity reserves include retained earnings, current year earnings, other equity reserves, revaluation reserves and minority interests in reserves. Total share capital is sum of common shares/stock, preferred stock, minority interest less treasury stock.

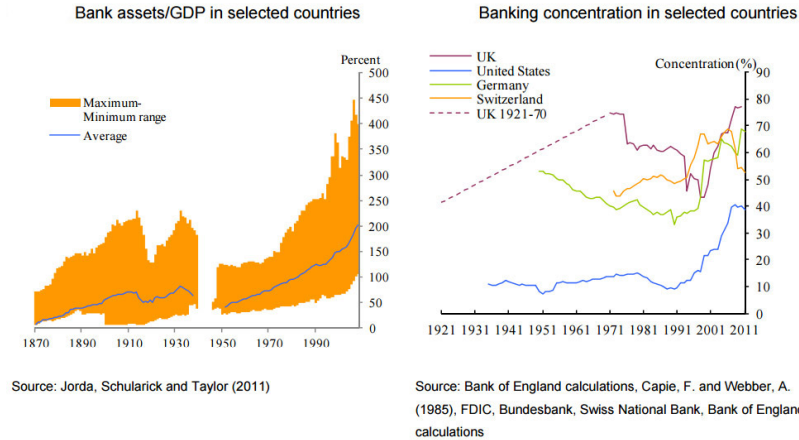
financial institutions in order to address increased risks to financial stability”, (Vestergaard/Retana, 2014, p.13-14) the decision is not sovereign. It would have to be approved by the Council of the EU which “can reject, by qualified majority, stricter national measures proposed by a member state” (Council of the EU, Council of the European Union). It would be therefore difficult for any member state to successfully apply for stricter requirements. Banks would lobby strongly against them whilst markets might infer that the system is vulnerable leading to a panic. Essentially, the EU institutionalises the banks’ aversion to capitalise (see Vestergaard/Retana (2014)).

3 Banking Structures and Business Models

The main activities of banks are very varied and include retail banking, corporate and investment banking, wealth management, investment solutions etc. Most large banks develop on two or three of those segments and become more specialised. Those categories of activity lead to the three main categories of business orientation: retail-funded commercial banks, wholesale-funded commercial bank and banks oriented on capital markets. The first two differ in the funding structure of the bank, whilst the third group engages more in services to banks and other financial institutions.

Geographically, big banks are international organisations, but some countries have stronger financial sectors. The European Union hosts 17 of the 30 banks that are classified as systemically important by the Financial Stability Board and most of them are based in France, the United Kingdom and Germany (FSB, 2011). Since 1970, the ratio of bank assets to GDP has far more than doubled, increasing 30 percentage points every ten years. In the UK alone, this ratio has increased fivefold. This is accompanied by a trend of market concentration,

which jumped drastically in the last two decades³.



The charts compiled by Haldane et al. (2012) show how the financial system expanded and concentrated. The expansion of the financial market shows significant increase in the biggest Western financial powers. The highest concentration is displayed by the UK which concentrated significantly just before the recent crisis. The biggest increase in concentration during the crisis was experienced by the German market. The only country that did not follow the trend of market concentration in the last two decades is Switzerland.

The financial crisis of 2008 has fuelled significant changes in banking models across Europe, both in Eurozone and non-Eurozone countries. Generally, the restructuring sees some trends of consolidation, cost containment and very minor deleveraging. There is also a trend of market concentration, the causes and intricacies of which show differences across countries, with countries more affected by the crisis displaying more pronounced structural changes. M&A activity also declined intra-eurozone and with eurozone banks being buyers outside of the eurozone (ECB, 2014b).

³In the euro area, the number of credit institutions fell from 6690 in 2008 to 5948 in 2014 (ECB Banking Structures Report, p.7) and their nominal total assets fell from €33.5T in 2008 to €26.8T in 2014 (ECB Banking Structures Report, p.6). Half of this contraction is attributable the banks' reduction of derivative positions in a general effort to deleverage non-core assets (ECB Banking Structures Report, p.6).

Germany is the largest economy within the EU. Commercial and corporate funding is mainly provided by loans rather than a capital market. German banking system is divided into three major parts: large private banks, i.e. Deutsche Bank and Commerzbank which have 40% of the market share; public banks, that is saving banks and landesbanken covering together 45% of the market share (e.g. Landesbank Baden-Württemberg, Bayerische Landesbank); and finally, cooperative banks, Volksbanken, Raiffeisenbanken (15%). Banks in Germany are owned by Germans in a substantial part (approx. 90%). This is mainly due to the fact that savings banks (Sparkassen) and cooperative banks (Genossenschaftsbanken) are public. The debate on privatising public banks remains a special protected area – for example, a private bank cannot buy savings banks or cooperative banks whilst the reverse acquisition is possible. Given the rich landscape of banks in Germany, which – in contrast to many other EU member states – is not dominated by a small number of institutions, only two of the private banks are large and only one is considered a systemically important financial institution (SIFI) (ECB, 2014b).

Deutsche Bank is Germany's largest bank with a presence in 70 countries and over a hundred thousand employees. In 2009, Deutsche Bank was the largest foreign exchange dealer globally with a market share of 21% (DB, 2015). Its business model is mixed but shows some focus on financial markets with services offered both to institutions and private clients. Services are as varied as sales, trading, research and origination of debt and equity, mergers and acquisition, risk management, retail banking, wealth management, fund management and transaction banking. In October 2015, it decided to reduce international presence and cut costs in an effort to recapitalise (Danhong, 2014).

The French and British systems are different to Germany's system in that the few largest groups completely dominate the market. The systemically im-

portant financial institutions (SIFIs) are: BNP Paribas, Cr dit Agricole, Soci t  G n ral , Banque Populaire Caisse d' pargne in France; and Lloyds Banking Group, Barclays, HSBC and Royal Bank of Scotland in the UK.

The business models of those banks are all very mixed. BNP Paribas focuses on corporate and investment banking, retail banking and investment solutions including large custodial activity with \$8.95 trillion of assets under custody. BNP Paribas escaped the 2007-09 credit crises relatively unscathed reporting a  3 billion net profit for the year of 2008, and  5.8 billion for 2009, whilst many other banks reported losses. Both years were boosted by profits from trading. HSBC, which is comparable in size to BNP Paribas, is organised within four business groups: commercial banking, global banking and markets, retail banking and wealth management, and global private banking. It operates in 80 countries and has around 60 million customers (HSBC, 2014).

Overall, banking structures within European Union members states are varied. The biggest outlier is probably Germany with its extremely high number of credit institutions at 1832 (representing 22% of all credit institutions in the European Union). German, French, Italian and Austrian institutions account for 65% of the Euro area and 50% of the European Union in terms of numbers, with the UK representing only 0.5% (ECB, 2015) of institutions in terms of numbers although it represents a third of total assets in the EU's banking market. The financial crisis has shown a trend of concentration of banks as failed institutions were absorbed by bigger banks, often those who received governmental financial assistance (Roengpitya/Tarashev/Tsatsaronis, 2014).

3.1 Subsidies

SIFIs, the biggest global banks, heavily rely on subsidies to risk which not only carry very high social cost but also artificially change the banking struc-

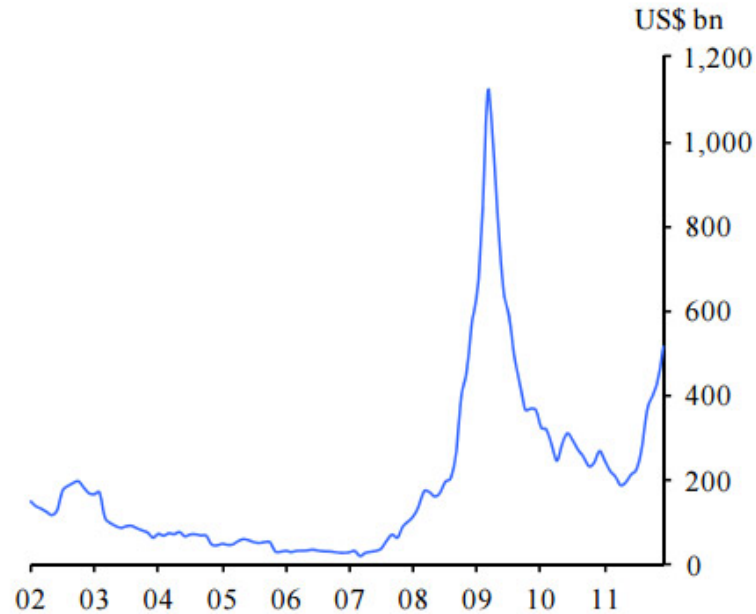
ture. They distort the financial sector in three main ways (see Noss/Sowerbutts (2012)). First, they create a competitive advantage for the selected banks that receive them, which allows them expand at the expense of banks that have no state guarantor. Second, they create abnormal incentives to take risks (Haldane/Alessandri, 2009), which has social costs that could significantly exceed the social benefit (Angelini et al., 2011; Haugh/Ollivaud/Turner, 2009; Hoggarth/Reis/Saporta, 2002; Laeven/Valencia, 2012). Third, they increase the financial sector as a whole, which diverts resources from other sectors.

Implicit subsidies are the core reason why the largest banks have continued growing. During 2002-2007, the world’s largest banks averaged around £70bn of subsidies yearly – implied subsidies account for approximately half of the average post-tax profits of the banks world’s largest banks over the period. Some more radical estimates suggest that implicit subsidies for systemically important banks in the UK were around £340bn yearly (around 20% of GDP) averaged over 2007-2010 (see Haldane et al. (2012); Haldane (2011) and Noss/Sowerbutts (2012)).

There are two main ways of calculating the size of subsidies for banks⁴. The first method, the funding advantage model, estimates the value of subsidies based on implicit government guarantee. This means it compares the counterfactual cost of banking if government guarantees were not present. The second method, the contingent claims model, estimates the necessary value of subsidies that are needed for banks to subsist. According to the funding advantage model, banking subsidies in the UK reached over £40bn in 2010. According to the contingent claims model, the same year in the UK amounted to roughly £120bn (Noss/Sowerbutts, 2012).

⁴Neither model gives a definitive answer. The funding advantage model relies on subjective ratings agencies’ estimates on the likelihood of bank failure and the likelihood of government support. The contingent claims model relies on financial market prices, but has to rely on the simplified assumption that that banks fail when their total assets fall to a value corresponding to the bank’s minimum equity ratio.

Chart 4: Implicit subsidy for systemic institutions



Source: Bank of England calculations

This chart from Haldane et al. (2012) shows the scale of the subsidies and their correlation to the crisis panic on a global scale. The largest subsidies – on levels historically unprecedented – were given two years after the crisis started. (Boyd/Heitz, 2012) propose a very compelling thought experiment. They compare the lowest estimate of the social cost of the crisis with the highest estimate of private profit of scale and scope economies available in the literature. Theoretically, banks choose the size that maximises their private value, but in practice implicit subsidies change the incentives structure. They increase the optimal bank size from the bank's perspective. This means that the too-big-to-fail problem was less a result of free market operations but rather largely

created by the policy to vastly subsidise and financially assist the largest banks.

Abandoning those subsidies would raise banks' funding costs and lower their value added, thereby reducing the economies of scale, i.e. the greater profits that stem from increased size. Without subsidies, there is no evidence of economies of scale at bank sizes over \$100bn of assets and some evidence of diseconomies of scale at that size (Boyd/Heitz, 2012). Abandoning the subsidies would largely resolve the 'too big to fail' spiral that creates unnaturally large institutions that then need additional assistance that in turn increases their size again.

3.2 Leverage in Banks across Europe

European banks have made significant progress in boosting their capital positions and in strengthening the overall resilience of the European banking system. With this recapitalisation exercise and a number of other EU-driven remedial actions, more than €200bn has been injected into the European banking system ... Banks are now in a better shape to finance the real economy but must continue on the path designed by the new regulatory environment.

– Andrea Enria (EBA, 2012)

As shown, the European Union's new regulation based on Basel III (CRD IV) is not stringent enough because the capital requirements are too low and too focussed on risk weighting instead of simpler ratios such as the leverage ratio. This biases the entire system towards excessive risk taking and greater systemic fragility.

Country	Netherlands	Italy	UK	Finland	Switzerland	France	Germany
Average SIFI LR	4.7%	4.5%	4.4%	4.3%	4.1%	4.0%	3.5%

Contrary to what the optimistic picture the ECB tries to paint, leverage ratios in Europe did not significantly improve. For instance, only 7 out of the 24 biggest banks were better capitalised in mid-2012 than in the end of 2011

(Vestergaard/Retana, 2014). Perhaps more surprisingly, the worst-capitalised banks are German and French, economies at the core of the EU, and not Spanish and Italian banks. This strongly undermines the narrative of problems on the EU peripheries and the North-South divide often portrayed in the media. In fact, the very core of the EU is at risk. This does not mean that the peripheries are well-equipped to buffer a potential crisis.

Name	Country	Total Assets €bn	Total T1 €bn	Total Exposure €bn	Leverage Ratio
BNP Paribas	France	2077.8	70.4	1955.6	3.6%
Deutsche Bank	Germany	1708.7	50.7	1445.0	3.5%
HSBC	UK	1696.0	142.0	2953.0	4.8%
Credit Agricole	France	1589.1	34.5	820.0	4.2%
Barclays	UK	1359.0	46.0	1233.0	3.7%
Societe Generale	France	1308.2	40.3	1060.5	3.8%
Groupe Banque Populaire	France	1233.3	51.1	1129.2	4.5%
UBS AG	Switzerland	1062.5	35.6	869.0	4.1%
Royal Bank of Scotland	UK	1051.0	51.4	1210.1	4.2%
Credit Suisse	Switzerland	921.5	41.4	1019.4	4.1%
Lloyds Banking Group	UK	858.9	36.0	739.7	4.9%
ING Group	Netherlands	828.6	37.1	790.3	4.7%
Nordea	Finland	669.0	25.4	590.8	4.3%
Commerzbank	Germany	577.6	25.1	583.7	3.4%
UniCredit Group	Italy	398.8	45.5	1011.1	4.5%

This chart compiled from each banks' annual report of 2014 makes it very apparent that the leverage ratios are extremely low for SIFIs. The banks were taken from the G-SIB (the FSB's global list of systemically important banks, (FSB, 2014)) list of systemically important financial institutions and reduced to only European banks. These are the banks that receive the largest implicit subsidies in the banking system.

4 The Lesson of Lehman Brothers

As shown, although business models are diverse, interconnectedness varies and markets have different structures, there is one property that is common to key countries' banking systems: extremely high leverage. The ECB's 2014 Comprehensive Assessment shows that other than the Baltic states and Slovenia, all countries' banks have on average leverage ratios below 8% (ECB, 2014a, p.128). For the biggest banks, the ones that are systemically important, leverage ratios are significantly lower, averaging 3.6%, with UK's Barclays reporting only 3.7% of equity.

Leverage played a key role in the financial crisis. Lehman Brothers invested \$50-60bn in mortgage markets which was a bubble that famously burst. It also significantly leveraged, from 4.1% in 2003 to 3.2% in 2007. In the first half of 2008 alone, the Lehman stock value fell by 73%. Despite attempts, Lehman Brothers failed to convince investors that it could survive on its own.

The causes gravitate around its extremely high leverage (PR Newswire, PR Newswire). Regulators allowed and still allow banks to borrow 30 times their equity. During booms, a 5% increase of total assets generates a 150% increase in the value of equity. During busts however, an asset value decline of even less than 3% potentially leads the bank to bankruptcy.

5 The lessons of the Euro Crisis

Capital regulation played an important role in the euro crisis and has to be understood in the context of the Basel Accords. Initially, the Basel Committee tried to ensure that foreign currency risks were accounted for in banking regulation and to encourage banks to hold sovereign debt of the bank's host country by portraying their risk as zero (Goodhart, 2011). This encouragement to ignore

sovereign debt risk persevered even though 'sovereigns' of the euro area had no control over money supply any more. As a consequence, introducing the Euro as a common currency changed the perception of debt of other countries, whose debt had different risk levels, to zero, because they were bound by the same currency.

This inconsistency has been crucial to the euro zone crisis. The increased use of marketable security was a key component of the crisis, because when equity became scarce during the crisis it reduced available credit for smaller businesses, which in turn led to higher unemployment making the overall crisis more acute. Banks were partly incentivised to bundle small loans into marketable securities because of the better risk weight categories that they could be assigned. Essentially, a large portion of the crisis can be attributed to financial pseudo-innovation that was motivated by exploiting regulatory standards. This had the effect of banks engaging in highly complicated and non-transparent networks of transactions. The consequence is that exiting the eurozone is a serious option for countries such as Greece.

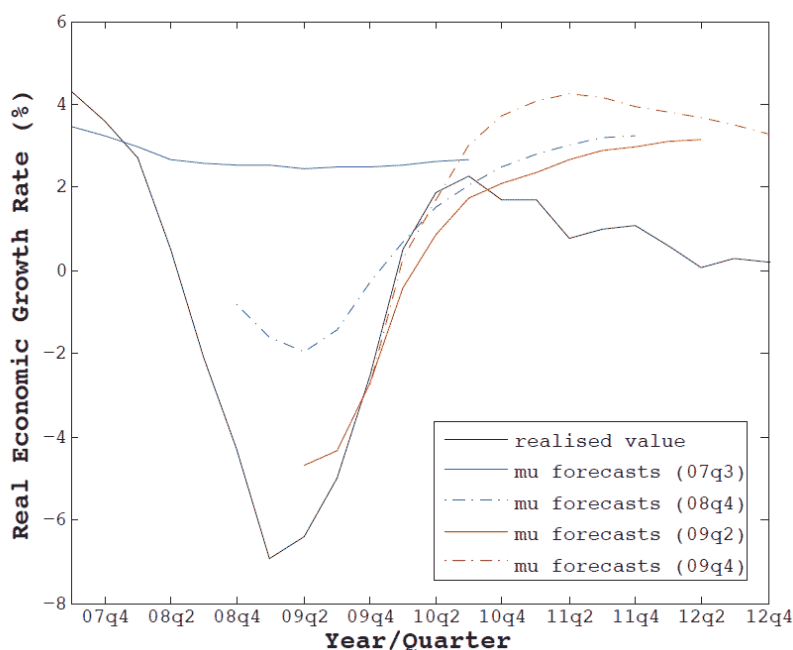
6 History of Regulators' Forecasting

A further lesson is offered by how overly optimistic regulators' forecasting tends to be. This forecasting underpins policy making, which means that if it is too optimistic, regulation will be too weak and misguided. Furthermore, it can misinform private actors about risks, which may increase systemic risk.

The recent financial crisis was not predicted by mainstream economics. Not only did mainstream economists fail to predict the crisis, they may have contributed to it. Their risk and derivatives models encouraged policy makers and investors to perceive higher stability and more risk sharing than was present. Once the crisis occurred, it was not understood very well, because mainstream

economic models underplayed interactive behaviour and only assumed shocks coming from outside of the system (Colander et al., 2009). Mainstream economics underpinned and still underpins policy making.

The Bank of England for example, severely underestimated the scale of events and initially maintained that it was only a liquidity problem and that the British banking system was adequately capitalised (Dowd, 2015, p.33). “It is very well capitalised, it is very strong ... I do not believe that in a year’s time people will look back and say there was any lasting damage to the British banking system.”, Mervyn King confidently told the Treasury Committee in January 2008 (Treasury – Fifth Report, 2008b). Neither assurance was true.



(Chart compiled by Dowd (2015), p.35, from original Bank of England data)

The Bank of England’s dangerous optimism can be seen very clearly in the its Monetary Policy Committee’s (MPC) forecasting. The MPC seems to have

ignored insights from its previous overconfidence in the recovery and has continued to underestimate the impact in each quarter. Each lines' starting point indicates when the forecast was conducted. In the third quarter of 2007, when the crisis just began, the MPC predicted 3% real GDP growth. More than a year later, when crisis was in full swing, the MPC predicted a moderate recession with a quick recovery (with mid-2009 growth at around -2% and positive growth just half a year later). Even by the end of 2008, the Committee was still under-estimating the fall in growth by about 50%. Even in the later periods, which were after the lowest points, the forecast were highly overoptimistic in their judgement of the recovery, predicting near-4% real growth at the end of 2010, when in reality the real growth rate fluctuated in the 0 – 2% region for the next years. Overall, such unjustified optimism dangerously misinformed policy-makers and investors.

7 European Stress Tests

This optimism is not only shared in policy makers' forecasting, but also in their stress testing of the current system's stability. The ECB (2014c) and Bank of England stress tests (2014b) of the current banking system are as overly optimistic as the Bank of England's real-GDP forecasting in the previous section. They are flawed in all of their aspects: the models themselves, i.e. the input-output relation, the data used, the metrics in terms of which the model's outputs are expressed, the pass/fail hurdle ratio, and the scenarios considered (for the Bank of England, see Dowd (2015); for more see Jenkins; Acharya et al.; Acharya/Steffen; Acharya/Engle/Pierret; Blum; Hogan/Meredith/Pan; Thomas L. Hogan/Pan; Vestergaard/Retana).

Modelling of this kind is fundamentally doomed to fail. There is moral hazard and asymmetry in the declared interest of the central bank and the

actual interest of the banks. A central bank reporting that the financial system is unstable undermines itself and risks undermining public confidence. Thus, the vast stress tests created by the ECB and the Bank of England have to be overly optimistic (see Allison (2012); Dowd (2015)).

Data in centralised stress tests is likely to be flawed. The risk-modelled data is likely to have underestimated risk, because of the incentive of banks to underreport risk. There are many ways in which banks do this. For instance, traditionally (GAAP), the standard accounting method would evaluate a capital position on its net realisable value and not on market price by the central banks (which use IFRS). In a perfectly informed and rational market, these values would be the same. In reality, market optimism will inflate the valuation of that capital position. A notorious example is the Royal Bank of Scotland appearing to have been able to manipulate the new standard to inflate its 2010 profits by £19-£25bn (Dowd, 2015; Kerr, 2011). Furthermore, for their stress tests both central banks rely on RWA measures, which underreport risk and overestimate true capital (see p.11).

To ensure methodological soundness, stress test scenarios should be varied and conservative. Since banks have different business models and thus exposures, if the scenarios considered are too similar, some vulnerabilities might not be diagnosed. They should be as conservative as possible to balance out the skewness of the aforementioned modelling and data, which are directed towards positive outcomes. The scenarios of the ECB and Bank of England are not varied and not conservative enough. Both use a single stress test scenario and highlighted risks only in certain parts of the financial system (Dowd, 2015, p.29).

The result of such stress tests is, as might expected, optimistic. The Bank of England, for example, only failed only 3 banks and concluded that overall the system was stable and “that the [UK banking system] has the strength

to continue to serve the real economy even in a severe shock.” (as in Dowd, 2015, p.14). The ECB stress test failed more banks, 24 banks out of 123, but only identified bad capitalisation in the euro area peripheries. For example, it identified the largest problem in Italy, failing nine banks there whilst only failing one bank in France and one in Germany. As already discussed, those results are attributable to the innovative and non-traditional metrics used in the stress tests. The traditional leverage ratio metric shows worse capitalisation in Germany and France.

This means that the ECB tries to attempts to construct a narrative that suggests that the European banking system is now far more stable than before the crisis. It also tries to shift responsibility onto EU peripheries instead of its very core, France and Germany. Authorities make many assurances about how better equipped the system is to deal with future crises. The question that remains is how banks would deal with the stresses of a crisis similar to the recent one.

8 An Alternative Stress Test

We propose a simple alternative stress test based that simulates the recent financial crisis to demonstrate the inadequacy of current capital regulation and ECB and Bank of England stress tests. We take the European 15 banks listed as SIFIs and subject them to two stress scenarios. In the first scenario, the crisis is emulated using exogenous shocks in asset value and no financial assistance is given to the banks. In the second, the same shocks are given but with substantial financial assistance. The stress test results show that banks are not adequately capitalised and that they would have to rely on financial assistance to subsist.

The virtue of this simple thought experiment is that there is no need to model any systemic effects, because they are already captured in the final values

of the asset value drops. Although the systemic risks of the current economy are likely to have a different landscape to the recent crisis (e.g. different levels of interest rates), assuming the same asset value drops is a conservative measure. This is because, as shown, banks are only marginally better capitalised, which, combined with their greater concentration, lends itself to the belief that the problem has likely deepened. Essentially, the question is of how banks would be affected if a similar crisis were to occur. Regulators claim that they have learnt their lesson and have forced banks capitalise more adequately. We will show the contrary.

The banks used in these stress tests are European banks categorised as SIFIs by G-SIB. The full list by descending total assets: HSBC, BNP Paribas, Royal Bank of Scotland, Groupe Banque Populaire, Deutsche Bank, Barclays, UniCredit Group, Credit Suisse, Societe Generale, ING Group, Lloyds Banking Group, UBS AG, Credit Agricole, Nordea, Commerzbank. This includes 4 French banks, 4 UK banks, 2 German banks, 2 Swiss banks, one Finnish and one Dutch bank.

The leverage ratio is used as the favoured capitalisation metric, because of its virtues already described. The ratios for the starting point (August) are taken from the newest annual reports (2014) of each bank.

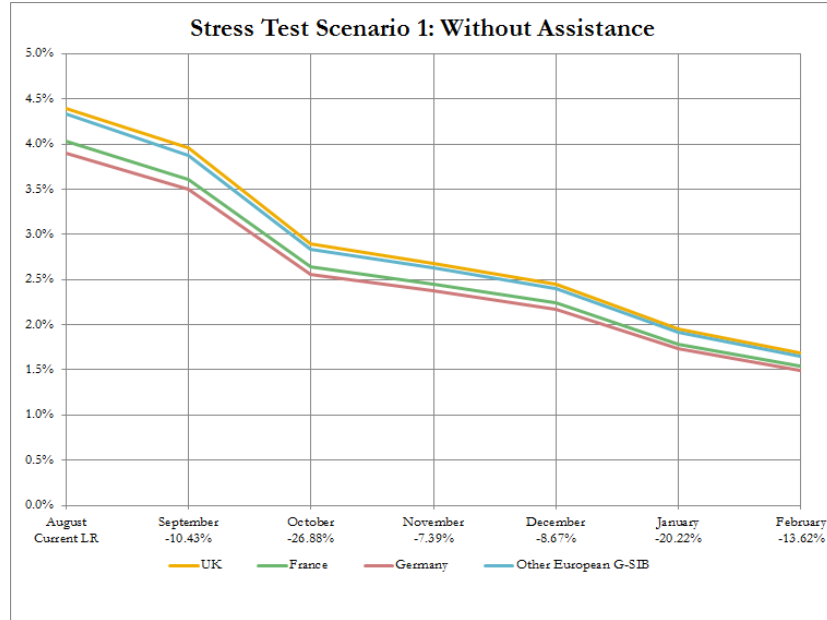
On the charts, for readability and insights into the international differences, we categorised the banks by country groups and grouped the Swiss, Finnish and Dutch banks into one category, because their significance was too small in comparison to the largest European economies to warrant their own categories.

We do not introduce a strict pass/fail criterion, because any hurdle this criterion has to be based on is, ultimately, arbitrary. For instance, any limit put on social costs is ultimately a morally laden decision that touches upon complex problems of collective responsibility, time preference and political philosophy.

Instead, we will show the outcome and discuss the ramifications. In purely economic terms however, there are some simple thought experiments that suggests that the leverage ratio requirement should be in the region of 15-30% (this will be discussed on p.33).

In both scenarios, we emulate shocks similar to the shocks in the six most crucial months of the recent financial crisis. The values of the asset value shocks are taken from the FSTE 350-banks historical market indices. These show the following drops for 2008: September -10.43%, October -26.88%, November -7.39%, December -8.67%, January -20.22%, February -13.62%. We chose this period because it precedes the most stressful half a year before the first large failure, the Lehman Brothers case, which is a crucial landmark on the crisis time line. In the first scenario, we introduce just those shocks. In the second, we also add financial assistance in September, November and January, at €10bn for each bank. To ensure a more conservative estimate, this sum is somewhat larger than the real financial assistance granted to European SIFIs.

8.1 Results for Scenario 1: Historical Shocks



The chart clearly shows how poorly banks could absorb a crisis similar to the recent one. The leverage ratios of country aggregates, from an already very low level in the range of 4.9%-3.5% drop more than half to a level of 1.5-1.7%. The least capitalised bank is Deutsche Bank with 1.3% of equity and the best in the group is Lloyds Banking Group at 1.9%. It is very unlikely that any of those banks could survive these shocks without assistance. Lehman Brothers had a leverage ratio of around 3% when its problems began. Furthermore, long before insolvency, the banks would be illiquid (Haldane, 2011).

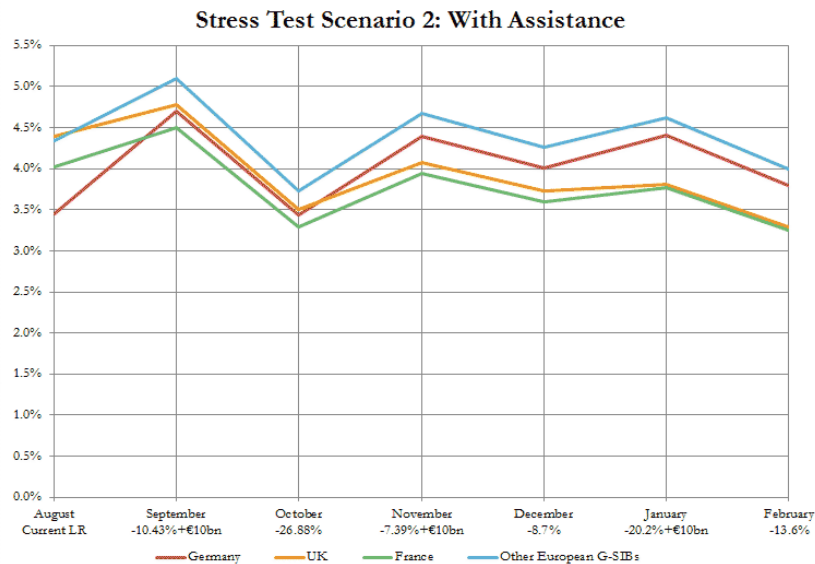
Although the UK is best-capitalised amongst large EU economies, its banks' leverage ratios are still dangerously low and the differences become less significant with later shocks as they decrease leverage ratios.

Given the extremely low leverage ratio to begin with and the fact that regulators claim that a 3% leverage ratio is sufficient, one can ask what banks would have to do to return to their previous leverage. Banks generally have three op-

tions to recapitalise: issue shares, withhold dividends and liquidate assets and debt. For instance, if the Deutsche Bank were to recapitalise to its previous leverage ratio only by liquidating, it would have to mobilise 1.4 trillion, which is more than its total assets.

8.2 Scenario 2: Same Shocks with Assistance

The second scenario very conservatively emulates the financial assistance that was given in the EU in the six most crucial months of the crisis. Under this scenario, every two months, each SIFI receives €10bn.



The chart shows that all banks manage to keep their leverage ratios at a similar level to the initial point given the financial injections, only falling slightly. This time, the worst final result is that of France at 3.2% and BNP Paribas at 2.4% bank-wise. Once again, the banks hosted by economies on the fringe of the EU are far better capitalised than the banks of large economies such as Germany or France. This contradicts the narrative constructed by the ECB that problems are near the margins of the EU, not at its very core.

Crucially, HSBC, the best-capitalised bank, fell from 4.8% to 2.5%, whilst the worst-capitalised Deutsche Bank from 3.5% initially fell only to 2.7%. This shows that it is the worst-capitalised best that are perversely and disproportionately rewarded by capital injections. This effect explains the greater discrepancy in results compared to the in the first scenario.

Finally, the second stress test shows that the banking system has to rely on those enormous capital injections in the case of crisis, because its leverage is too high.

9 How Much Equity is Enough

There is one simple thought experiment that demonstrates how high equity should be to minimise social cost of failures and have a robust banking system. As will be discussed in greater detail later (p. 36), it is reasonable to take into account the liabilities at the point of default and the total social loss resulting from the default. The ratio between those two values ratio happens to be 19% for US banks 1978-2007, i.e. at the point of default, banks burdened the public with 19% of the value they had held as liabilities. A reasonable leverage ratio requirement should try to minimise social cost and thus be high enough to buffer against the social losses introduced by that. Clearly, the current requirements are substantially too low and allow banks to be dependent on financial assistance.

The literature on the topic is rich and the academically accepted standard suggests a leverage ratio of at least 15%-30% and even higher levels for systemically important institutions (see Acharya et al.; Admati et al.; Admati/Hellwig; Admati; Adrian/Shin; Allison; Berger/Bouwman; Blum; Blundell-Wignall/Roulet; Ratnovski; Vestergaard; Vestergaard/Retana).

10 Causes of High Leverage

As previously mentioned, the Modigliani/Miller (1958) model predicts that if the value of a firm is dependent on capital structure, then it must be because of frictions. Since bankers lobby against leverage ratio requirements, these distortions must be real. They are primarily caused by government regulation in all its domains of influence: fiscal, monetary and structural. In all of those domains, the regulations favour high leverage which increases systemic fragility and leads to higher costs during crises. Furthermore, the consequence of widely applying the model with its assumption that there exists no bankruptcy cost becomes particularly painful in cases of bankruptcy which usually send big shockwaves through the entire economy.

Monetarily, the near-zero interest rate environment which the European market has experienced since 2009, made debt extremely cheap.

Fiscally, as discussed, governments often encourage excessive risk taking through bail-outs and various subsidies for large banks. The various safety nets instituted to absorb economic shocks such as national governments standing ready to support banks' liabilities, creates perverse incentives in the banks' risk management. These measures were originally introduced to reduce the inefficiencies created by crisis scenarios such as bank runs. In the case of bank runs, deposit insurance was introduced and the safety nets have been steadily expanding to other areas. Even a small reduction in the trust to a bank, can lead to creditors withholding funding, which requires banks to sell their assets quickly for less than the market price to meet their obligations.

At the same time, corporate tax codes encourage debt financing (i.e. high leverage) because the interest paid on the debt can be written off. The debate amongst economists on whether corporate tax codes make sense is partly caused by this effect (Boskin/Gale, 1987).

The subsidised guarantees on bank debt that the government provides artificially lower the cost of bank debt. Deposit insurance and other guarantees do not reflect the true riskiness of the assets they protect. Consequently, debt holders do not sufficiently control banks through monitoring and constraining the use of debt. This partly leads to the situation which lets equity holders and bankers benefit from high returns, whilst potentially letting creditors and governments pay if ROE turns negative. It is a privatisation of profits and socialisation of costs.

Equity with its higher risk has higher required returns than debt. However, this does not imply that a capital structure with more equity, increases the overall funding cost of banks. Lowering leverage lowers the riskiness of equity and unless securities are mispriced, rearranging risk should not affect (assuming no frictions such as tax shields for debt) funding whatsoever. Nevertheless, numerous policy-makers fail to incorporate this basic fact into their rationales. The Basel Committee itself takes the required return on equity to be a constant number. Yet, this required return decreases with increased equity as it becomes safer, which is a basic law that completely ignored by the empirical analyses of the Committee (BIS, 2010a).

Furthermore, too high leverage and the possibility of default that comes with it, can seriously distort investment decisions. Any new investment that has prospective returns after a default would be seen as of no value by the investor. This means that the possibility of default may disincentivise banks to make productive long-term investments. This also means that a bank will be more willing to take risks with borrowed funds if it expects a default. Once equity is fully depleted by an asset value drop, any further losses will not affect the bank owners. After all, they cannot get less than nothing from their shares in the bank, so any further losses would have to be covered by the creditors (or

taxpayers). This structure gives two outcomes to gamble with: either equity value rises or creditors (or taxpayers) lose more. Clearly, the downside of the risk is not borne by the decision makers. At very low leverage ratios, the risk of default becomes reality. This phenomenon is independent of deposit insurance and any highly leveraged corporation can be affected; in fact, deposit insurance can encourage even more risky borrowing because it makes decisions insensitive to returns in the case of default (Myers, 1977).

This knowledge allows for a simple thought experiment that may help with the judgement of how high leverage ratio should be: the size of public losses from failed banks and the deposit liabilities. Combining those two metrics into a fraction gives a measure that can serve as an estimate of how high the capital requirements have to be to make sure that owners are not incentivised to take the risks associated with failure. This value happens to be 19% for US banks that failed in 1978-2007 (Laeven/Valencia, 2012; Ratnovski, 2013). If a bank's equity as a fraction of deposit liabilities is less than that, the social loss can be expected to be greater than the private cost of the bank's failure.

Having explained some of the reasons why leverage is so high, it is worth exploring some of the confusions that may have informed requirements on leverage. Confusion often arises because equity is portrayed as idle and thus costly. In fact, capital requirements address only how banks are funded, not what assets they invest in. A frequently cited argument in opposition to legislation increasing required leverage ratios is that high leverage increases the return on equity (ROE). ROE is often used to measure a bank's profitability. In any firm, leveraging amplifies both risk and average returns. ROE can only be used to compare between banks that have the same capital structure, because the capital structure has impact on ROE.

In many cases, lower leverage ratios mean lower return for shareholders, but

only because government safety net subsidies are lost (Admati et al., 2011). The cost is real because an increase in equity will transfer risk back onto the bank owners from the public. In the case of very highly leveraged SIFIs, this risk is borne by the public.

However, without the influence of subsidies and tax structures favouring leverage, the “cost” of that increased return on equity is the risk. Returns and risk must be balanced. In well-functioning markets there is a trade-off between risk and average return. An increase in ROE in isolation does not indicate anything about value for shareholders. Higher ROE could only be useful if leverage and risk were held constant (Admati et al., 2011).

Higher ROE generated through risk taking and leverage alone is a matter of luck, not of wise investment. If the leverage ratio is very low, a higher ROE does not even necessity mean higher profitability, because ROE is a percentage dependent, so if equity is very small a high ROE mean that that total profit is smaller than it would be on large equity with a lower ROE. Leverage increases realised ROE when realised returns are higher than the average interest rate, but equally it magnifies losses when returns are negative. This is exactly the effect that highly leveraged banks as well as sub-prime borrowers experienced in the recent crisis (Admati et al., 2011).

The argument that higher leverage ratios would hurt investment can only be based on the false assumption that investors do not care about risk. If this were the case, all firms would choose very high leverage. The focus on ROE in banking is partly because high leverage allows increasing government subsidies in both the fiscal domain as well as government-provided severely under-priced guarantees. Overall, Admati et al. (2011) comprehensively show that higher capital requirements do not hinder growth in a healthy financial system.

Myers and Majluf (1984) show that when decision makers of a firm have to

choose between financing new investments by borrowing money or by selling new equity shares, they face a difficult dilemma. Managers are more likely to sell new equity when their private information suggests that the market has overvalued their stock. As a consequence, the market sees a firm's decision to issue new shares as a signal that there are problems with the firm. This effect may indeed make equity financing more costly than debt financing. Nevertheless, this effect does not apply in the case of a regulator requiring banks to sell new equity based on public information, because there is no negative inference as all parties are well-informed. Effectively, the cost of raising new equity through issuing shares in the case of public regulation may actually be lower than if it were privately decided.

11 New Directions

11.1 Leverage

Banks can increase their equity by issuing shares or not paying dividends to their shareholders or downsizing. Regulators could create directives that require combining those methods. The advantage of withholding dividends is that it is simple and certain to expand equity. This simplicity is not present in bail-in or debt conversion scenarios, which require great effort to measure values and correctly gauge when banks would be insolvent without debt conversion. Furthermore, debt conversion is made difficult by market participants, both private as well as public. Of course, withholding dividends will also cause political friction, but to a far lesser extent than debt conversion.

Furthermore, forcing banks to issue more shares could have the benefit of eliminating, in a controlled environment, banks that cannot subsist without assistance. As has been shown, the banking system is crucially dependent on

public financial assistance. This social cost can be decreased if, in a controlled environment, zombie banks can be allowed to fail. If banks can create real innovation, instead of gaming poor accounting standards and regulation, they will survive.

As importantly, the natural level of equity that would be the case in a frictionless market can be levelled by restructuring the tax system. Because corporations can deduct debt interest from their taxes, it distorts the cost of debt and makes it significantly cheaper than in a free market. Alternatively, banks and firms could be allowed to deduct from profits an allowance for corporate equity⁵. This has been proposed in the (Haldane, 2011; Johnson/Myles, 2011). Thus, to solve the frictions caused by the tax system, a radical shift to remove or severely limit tax deductability for debt could be committed to.

The highest priority however is posed by leverage ratio requirements, which need to be significantly higher than 3% and significantly higher than banks hold in reality, the 4-5% leverage ratios for large banks. As has been extensively discussed, the leverage ratio requirements are far too low. Increasing them has no social cost and it is simpler than large banks portray it. Lower leverage would make the entire banking system more stable and minimise the need for public financial assistance. The leverage ratio measure should be conservative and such that it cannot be manipulated to underreport risk. Higher leverage ratios would stabilise the banking system and fundamentally free it from the need of perpetual public support. As already discussed, there is a wealth of evidence to suggest that leverage ratio requirements should be in the region of 15-30% depending on bank size.

These requirements can be introduced gradually to create a safe environment

⁵Public finance theory and best practice dictates that non-neutral taxes are only justified to counter the effects of externalities, such as the cost of default and debt overhang, which is caused by too high bank leverage. If the externalities are large, there is a case to be made for such tax non-neutrality.

for the inevitable, necessary and ultimately desirable failure of zombie banks, e.g. introducing them over time and over different investment. Banks should be required to liquidate asset at a tempo that will not disrupt markets because of supply shocks causing price shocks. Different types of assets will have different volatility in this regard, so regulators should take that into account. It could be required that new investments must immediately be funded by a certain proportion of equity.

11.2 Accounting Standards

A further direction for policy would be to review the current accounting standards. As previously discussed, they have had disastrous consequences and fuelled the recent crisis.

Fundamentally, all decision-making in finance reflect problems of information. Individuals entrust their financial investments to financial intermediaries who are considered to be better informed about investment opportunities. This information-based system requires very good metrics. For instance, equity requirements are defined in proportion to items on the balance sheet, and both assets and liabilities may be used for the ratio. It may make sense to see leverage in terms of liabilities, because it is the liabilities that the equity is needed for, not the assets. Of course, this value can be converted easily ($\frac{X}{1-X}$, where X is the fraction of total assets) to account for the other. There is a serious problem with current accounting standards however.

The GAAP standard allows for closely linked assets and liabilities to be netted out, so that neither amount appears on the balance sheet. For example, two banks enter an interest rate swap. This swap is as if the banks sold each other a bond, one with a fixed interest rate and the other with a variable interest rate; this method is often used to transfer interest rate risks. The IFRS standard

would list both bonds as liabilities and assets. Thus it would have no effect on the equity value, but increase the bank's required equity by the value of the bond. The GAAP sees the two as so similar that it allows for them to be cancelled out and thus not appear on the balance sheet. In this standard, the swap would have no effect on required equity. In reality however, such swaps can evoke real liabilities.

In fact, Admati/Hellwig (2014) show the difference of the two accounting standards on the JPMorgan Chase Annual Report of 2011. Under both standards, the same net equity has to be reported (\$184bn). The difference is in the assets and liabilities from swaps and other derivatives, which in the IFRS standard would have to be reported at \$1.79 trillion more of assets and liabilities in contrast to GAAP which allows for netting out. This means that under GAAP, JPMorgan Chase Bank would report a leverage ratio of 8%, whilst the IFRS used in the EU would dictate only a 4.5% leverage ratio.

Generally, financial transactions that generate significant risk should not remain unreported to the public, just because of flawed accounting standards. After all, the public is the final guarantor of banking stability, which is fundamentally built on trust.

11.3 Legal Liability and Bank Governance

Furthermore, there is a significant problem with bank management where incentives are skewed towards risk-taking, because risk is not translated onto the agents.

Although a general historical development has been to de-link bank managers from legal liability (see Turner, 2009b), a new bill was recently introduced in the UK. Top bank managers and executives are now to be covered in a policy that makes reckless misconduct in the management of a bank a criminal offence.

The rationale behind this new policy is to deter socially costly misconduct the necessity for financial assistance. This updated criminal legislation would reflect strong disapproving signals from society directed at bankers (PCBS, 2013). It would also somewhat remedy the current imbalance of the criminal law that strictly penalises small scale misconduct, but ignores large scale misconduct at the top management levels. There is however some doubt about the effectiveness of the proposed measure.

It is unclear what the domain covered by the new policy is and what actions would give rise to criminal liability. Furthermore, it is unclear what the deterrence effect would be. The Treasury introduces three standards of liability: strict liability, negligence and recklessness. The strongest deterrent effect can be achieved by strict liability. Nevertheless, because the policy is vaguely formulated that effect could be negated by the way the law is interpreted. In many areas, the effects of strict liability are negated by disproportionately low fines (Black/Kershaw, 2013). The standard of negligence also presents significant difficulties. Because financial failures are judged with hindsight, judgements are likely to be skewed towards making the banker responsible. It is very important to balance the incentives for risk-aversion so as to lead to socially optimal outcomes. If the incentives are not strong enough, the problem of socialised risk is not remedied. If they are too strong, excessive risk-aversion may either lead to a self-selection of managers who are naturally risk-loving because risk-neutral and risk-averse managers might refuse to serve.

Most crucially, the new policy does not remedy any situation in which misconduct is system-wide. This is because any standard of conduct can only be assessed by reference to the entire environment. If, for instance, all bankers recklessly increase their leverage, it cannot be held against them under this provision. As already explained, the single most important risk factor in the

current banking system is the extremely high and system-wide leverage. This makes the misconduct policy far less effective in terms of general stability and only perhaps useful for individual cases of misconduct.

Furthermore, even those individual cases are very difficult to prove. There is significant knowledge asymmetry between the prosecution and defence, which is very costly to lift. Historically, similar cases had investigation and legal costs often surpassing the value of the fine and banks were very willing to spend high sums to defend their managers (Black/Kershaw, 2013, p.3). The burden of proof in criminal cases is also significant, because responsibilities in large corporations are quite diluted and many management decisions can be made in a way that is not transparent to prosecution. For instance, managers – knowing that they are acting in risky territory – might communicate with their subordinates in subtle ways without directly giving orders or formulating tangible company policies.

Instead, the simplest solution may be to replace limited liability with extended shareholder liability. It is commonly believed that banking should make use of limited liability instead of extended shareholder liability because the enforcement cost seriously reduces liquidity of shares. However, Acheson/Hickson/Turner (2010) show that this view is empirically unsubstantiated and provide strong evidence that stock liquidity is independent of the type of manager and owner liability. This is a liability mode in which bank managers would be strongly incentivised to make decisions that have less social cost, because their misconduct would directly translate onto their wealth.

There are two main control and ownership models in banking: public limited company and mutually-owned cooperative. In public limited companies, control is based on portfolio weights and given to a small minority of liability-holders. In cooperatives, control is much more widely spread and is independent of portfolio weights. Both have distinct weaknesses. The principal agent problem of public

limited companies is that risk and rent seeking by the small minority can be done at the expense of the majority. For cooperatives, there is a misalignment between voting rights and the stakes agents put at risk.

Nevertheless, there may be solutions to these weaknesses. For instance, Haldane (2011) suggests that it might be desirable to extend voting rights to a wider array of liability holders. It seems desirable to distribute the control across the entire balance sheet, i.e. introduce a “wealth-weighted democracy” (Haldane, 2011, p.12) empowering bond and deposit holders.

A hybrid of the two models could ensure that there are more incentives to manage risk responsibly. This combination would take the best from both worlds: correct incentives and enhanced diversity in the financial system.

12 Conclusion

Overall, significant changes in the EU banking system are needed. Regulators have introduced new standards and regulation and consulted mostly industry ambassadors instead of academic experts. The results are capital inadequacy in all of the EU’s largest banks, which leads to an environment in which much risk (and thus cost) is public, but profits are private.

As shown, the history of the outcomes of still current regulation was disastrous for EU economies. Current accounting standards significantly catalysed the euro sovereign debt crisis by misrepresenting the real risk associated with government bonds. It also created incentives for banks to be too highly leveraged which induced significant systemic fragility. The capital requirements are too low to significantly reduce this risk. At the same time, tax structures favour debt over equity and decision makers are not realistically legally liable. Banks have strong incentives to remain at the brink of insolvency, because that creates a need for innumerable government subsidies, which would be lost if there were

less systemic fragility.

At the same time, the European Central Banks invents creative new accounting standards that mask the fact that it is EU's core economies' banks, French and German banks, that are worst capitalised. The ECB and the Bank of England both produce stress tests which suggest that the system is far less vulnerable than it is.

To remedy this, policy should focus on decentralising. Instead, regulators seem to want to centralise even more. Policy makers should focus on changing the perverse incentives that pervade the banking system; structurally, capital requirements, transparency, legal liability, and ownership models; monetarily, the zero interest rates environment and other incentives for debt; fiscally, the constant implicit and explicit government subsidies. Above all, policy makers should insist on much higher leverage ratio requirements for the banks that they regulate.

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